



Flammable Vapor Ignition Resistant Compliant

Power Direct Vent Gas Water Heater Installation Instructions and Use & Care Guide

WARNING: If the information in these instructions is not followed exactly, a fire or explosion may result causing property damage, personal injury or death.

Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any telephone in your building.**
- **Immediately call your gas supplier from a neighbor's telephone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

Installation and service must be performed by a qualified installer, service agency or the gas supplier.



To obtain technical, warranty, or service assistance contact place of purchase or local distributor.

1-800-456-9805

When calling for assistance, please have the following information ready:

1. Model number
2. 7 digit product number
3. Serial number
4. Date of installation
5. Place of purchase

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Your safety and the safety of others are very important.

We have provided many important safety messages in this manual and on your appliance. Always read and obey all safety messages.



This is the safety alert symbol.

This symbol alerts you to potential hazards that can kill or hurt you and others.

All safety messages will follow the safety alert symbol and either the word "DANGER" or "WARNING." These words mean:

DANGER

You can be killed or seriously injured if you don't immediately follow instructions.

WARNING

You can be killed or seriously injured if you don't follow instructions.

All safety messages will tell you what the potential hazard is, tell you how to reduce the chance of injury, and tell you what can happen if the instructions are not followed.

Important Instructions

- Do not use this appliance if any part has been under water. Immediately call a qualified service technician. Water heaters subjected to flood conditions or anytime the gas controls, main burner or pilot have been submerged in water require replacement of the entire water heater.
- Hydrogen gas can be produced in a hot water system that has not been used for a long period of time (generally two weeks or more). Hydrogen gas is extremely flammable and can ignite when exposed to a spark or flame. To prevent the possibility of injury under these conditions, we recommend the hot water faucet be opened for several minutes at the kitchen sink before using any electrical appliance which is connected to the hot water system. If hydrogen is present, there will probably be an unusual sound such as air escaping through the faucet as water begins to flow. Do not smoke or have any open flame near the faucet at the time it is open.

The California Safe Drinking Water and Toxic Enforcement Act requires the Governor of California to publish a list of substances known to the State of California to cause cancer, birth defects, or other reproductive harm, and requires businesses to warn of potential exposure to such substances.

Warning: This product contains a chemical known to the State of California to cause cancer, birth defects, or other reproductive harm.

This appliance can cause low-level exposure to some of the substances listed, including formaldehyde, carbon monoxide, and soot.

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INSTALLING YOUR GAS WATER HEATER

Consumer Information

This water heater is design-certified by CSA International as a Category I, direct vented water heater which takes its combustion air from the outside of the structure and exhausts all products of combustion to the outside of the structure.

This water heater must be installed according to all local and state codes or, in the absence of local and state codes, the "National Fuel Gas Code", ANSI Z223.1(NFPA 54)-latest edition. Canadian installations must be performed in accordance with CAN/CGA-B149. This is available from the following:

CSA America, Inc.
8501 Pleasant Valley Road
Cleveland, OH 44131

National Fire Protection Agency
1 Batterymarch Park
Quincy, MA 02169-7471

Canadian Standards Association
178 Rexdale Boulevard
Toronto, ON M9W 1R3

Check your phone listings for the local authorities having jurisdiction over your installation.

Consumer Responsibilities

This manual has been prepared to acquaint you with the installation, operation, and maintenance of your gas water heater and provide important safety information in these areas.

Read all of the instructions thoroughly before attempting the installation or operation of this water heater.

Do not discard this manual. You or future users of this water heater will need it for future reference.

Service to the Power Direct Vent System should only be performed by a qualified service technician.

Examples of qualified service technicians include: those trained in the plumbing and heating industry, local gas utility personnel, or an authorized service person.

The manufacturer and seller of this water heater will not be liable for any damages, injuries, or deaths caused by failure to comply with the installation and operating instructions outlined in this manual.

If you lack the necessary skills required to properly install this water heater, or you have difficulty following the instructions, you should not proceed but have a qualified service technician perform the installation of this water heater. Massachusetts code requires this water heater to be installed in accordance with Massachusetts Plumbing and Fuel Gas Code 248 CMR Section 2.00 and 5.00.

A data plate identifying your water heater can be found next to the gas control valve/thermostat. When referring to your water heater, always have the information listed on the data plate readily available.

Retain your original receipt as proof of purchase.

WARNING

Excessive Weight Hazard

Use two or more people to move and install water heater unless proper handling equipment is utilized.

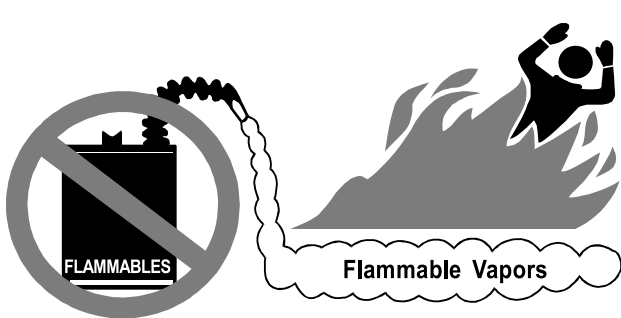
Failure to do so can result in back or other injury.

Unpacking the Water Heater

Important: Do not remove any permanent instructions, labels, or the data label from outside of the water heater or on the inside of panels.

- Remove exterior packaging and place installation components aside.
- Inspect all parts for damage prior to installation and start-up.
- Completely read all instructions before attempting to assemble and install this product.
- After installation, dispose of packaging material in the proper manner.

⚠ WARNING



FIRE AND EXPLOSION HAZARD
Can result in serious injury or death

⚠ Do not store or use gasoline or other flammable vapors and liquids in the vicinity of this or any other appliance. Storage of or use of gasoline or other flammable vapors or liquids in the vicinity of this or any other appliance can result in serious injury or death

Location Requirements

⚠ WARNING

Carbon Monoxide Poisoning Hazard
Do not install in a mobile home.
Doing so can result in death or carbon monoxide poisoning.

Do not use or store flammable products such as gasoline, solvents, or adhesives in the same room or area near the water heater. If such flammables must be used, all gas burning appliances in the vicinity must be shut off and their pilot lights extinguished. Open the doors and windows for ventilation while flammable substances are in use.

If flammable liquids or vapors have spilled or leaked in the area of the water heater, leave the area immediately and call the fire department from a neighbor's home. Do not attempt to clean the spill until all ignition sources have been extinguished.

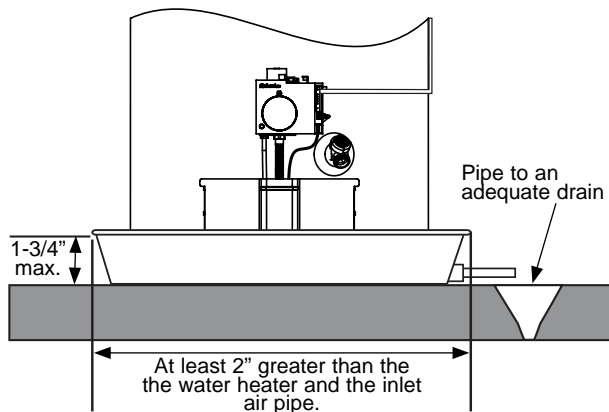
Site Location

- Select a location near the center of the water piping system. The water heater must be installed indoors and in a vertical position on a level surface. DO NOT install in bathrooms, bedrooms, or any occupied room normally kept closed. **Note:** The water heater may be installed in a closet with a door off a bedroom or bathroom providing the units are installed and vented per the manufacturer's instructions.
- Consider the inlet and exhaust vent system piping when selecting the water heater location. The venting system must be able to run from the water heater to the termination with a minimal length and number of elbows. The venting system must comply with the requirements set forth in the venting section of this manual.
- Locate the water heater near the existing gas piping. If installing a new gas line, locate the water heater to minimize the pipe length and elbows.

Note: This water heater must be installed according to all local and state codes or, in the absence of local and state codes, the "National Fuel Gas Code", ANSI Z223.1(NFPA 54)-latest edition. Canadian installations must be performed in accordance with CAN/CGA-B149.

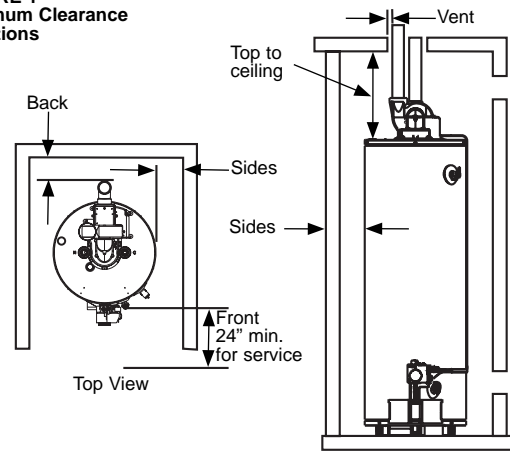
Important: The water heater should be located in an area where leakage of the tank or connections will not result in damage to the area adjacent to the water heater or to lower floors of the structure. **Due to the normal corrosive action of the water, the tank will eventually leak after an extended period of time.** Also any external plumbing leak, including those from improper installation, may cause early failure of the water tank due to corrosion if not repaired. A qualified service technician should be contacted for repairs. A suitable metal drain pan should be installed under the water heater as shown below, to help protect the property from damage which may occur from condensate formation or leaks in the piping connections or tank. The pan must limit the water level to a maximum depth of 1-3/4" and be two inches wider than the heater and piped to an adequate drain. The pan must not restrict combustion air flow. Locate the water heater near a suitable indoor drain. Outside drains are subject to freezing temperatures which can obstruct the drain line. The piping should be at least 3/4" ID and pitched for proper drainage.

Under no circumstances will the manufacturer or seller of this water heater be held liable for any water damage which is caused by your failure to follow these instructions.



- The water heater should be located in an area not subject to freezing temperatures. Water heaters located in unconditioned spaces (i.e., attics, basements, etc.) may require insulation of the water piping and drain piping to protect against freezing. The drain and controls must be easily accessible for operation and service. Maintain proper clearances as specified on the data plate.

FIGURE 1
Minimum Clearance
Locations



Clearances and Accessibility

Notice: Minimum clearances from combustible materials are stated on the data plate located on the front of the water heater.

- The water heater is certified for installation on a combustible floor.

Important: If installing over carpeting, the carpeting must be protected by a metal or wood panel beneath the water heater. The protective panel must extend beyond the full width and depth of the water heater by at least 3 inches (76.2mm) in any direction or if in a alcove or closet installation, the entire floor must be covered by the panel.

Figure 1 may be used as a reference guide to locate the specific clearance locations. A minimum of 24 inches of front clearance and 4 inches on each side should be provided for inspection and service.

State of California

Note: The water heater must be braced, anchored, or strapped to avoid moving during an earthquake. Contact local utilities for code requirements in your area or call **1-800-456-9805** and request instructions.

GAS SUPPLY

⚠ WARNING



Explosion Hazard

Use a new AGA or CSA approved gas supply line.

Install a shut-off valve.

Do not connect a natural gas water heater to a L.P. gas supply.

Do not connect a L.P. gas water heater to a natural gas supply.

Failure to follow these instructions can result in death, explosion, or carbon monoxide poisoning.

Gas Requirements

Read the data plate to be sure the water heater is made for the type of gas you will be using in your home. This information will be found on the data plate located near the gas control valve. If the information does not agree with the type of gas available, do not install or light. Call your dealer.

Note: An odorant is added by the gas supplier to the gas used by this water heater. This odorant may fade over an extended period of time. Do not depend upon this odorant as an indication of leaking gas.

Gas Piping

This gas piping must be installed according to all local and state codes or, in the absence of local and state codes, the "National Fuel Gas Code", ANSI Z223.1(NFPA 54)-latest edition. Canadian installations must be performed in accordance with CAN/CGA-B149.

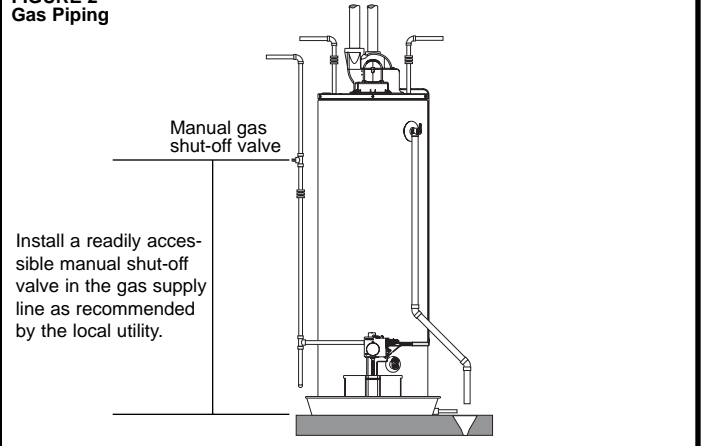
Tables 1 and 2 on page 7 are provided as a sizing reference for commonly used gas pipe materials. Consult the "National Fuel Gas Code" for the recommended gas pipe size of other materials.

Refer to Figure 2

Note: When installing gas piping, apply approved pipe joint compound.

1. Install a readily accessible manual shut-off valve in the gas supply line as recommended by the local utility. Know the location of this valve and how to turn off the gas to this unit.
2. Install a drip leg (if not already incorporated as part of the water heater) as shown. The drip leg must be no less than three inches long for the accumulation of dirt, foreign material, and water droplets.
3. Install a ground joint union between the gas valve/thermostat and the manual shut-off valve. This is to allow easy removal of the gas valve/thermostat.
4. Turn the gas supply on and check for leaks. Use a chloride-free soap and water solution (bubbles forming indicate a leak) or other approved method.

FIGURE 2
Gas Piping



Gas Pressure

Important: The gas supply pressure must not exceed the maximum supply pressure as stated on the water heater's data plate. The minimum supply pressure is for the purpose of input adjustment.

Gas Pressure Testing

Important: This water heater and its gas connection must be leak tested before placing the appliance in operation.

- If the code requires the gas lines to be tested at a pressure exceeding 14" W.C., the water heater and its manual shut-off valve must be disconnected from the gas supply piping system and the line capped.
- If the gas lines are to be tested at a pressure less than 14" W.C., the water heater must be isolated from the gas supply piping system by closing its manual shut-off valve.

U.L. recognized fuel gas and carbon monoxide (CO) detectors are recommended in all applications and should be installed using the manufacturer's instructions and local codes, rules, or regulations.

Note: Air may be present in the gas lines and could prevent the pilot from lighting on initial start-up. The gas lines should be purged of air by a qualified service technician after installation of the gas piping system.

L.P. Gas

⚠ WARNING



Explosion Hazard

Have a qualified service technician make sure L.P. gas pressure does not exceed 13" water column.

Failure to do so can result in death, explosion, or fire.

Table 1

Natural Gas Pipe Capacity Table (Cu. Ft./Hr.)

Capacity of gas pipe of different diameters and lengths in cu. ft. per hr. with pressure drop of 0.3 in. and specific gravity of 0.60 (natural gas.)

Nominal Iron Pipe Size, in.	Length of Pipe, Feet													
	10	20	30	40	50	60	70	80	90	100	125	150	175	200
1/2	132	92	73	63	56	50	46	43	40	38	34	31	28	26
3/4	278	190	152	130	115	105	96	90	84	79	72	64	59	55
1	520	350	285	245	215	195	180	170	160	150	130	120	110	100
1-1/4	1050	730	590	500	440	400	370	350	320	305	275	250	225	210
1-1/2	1600	1100	890	760	670	610	560	530	490	460	410	380	350	320

After the length of pipe has been determined, select the pipe size which will provide the minimum cubic feet per hour required for the gas input rating of the water heater. By formula:

Min. Cu. Ft. Per Hr. Required=

Gas Input of Water Heater (BTU/HR)

Heating Value of Gas (BTU/FT³)

The gas input of the water heater is marked on the water heater data plate. The heating value of the gas (BTU/FT³) may be determined by consulting the local natural gas utility.

Table 2 LP Gas Capacity Table Maximum capacity of pipe in thousands of BTU per hour of undiluted liquefied petroleum gases (at 11 inches water column pressure.) Based on a pressure drop of 0.5 inch water column.													
Nominal Iron Pipe Size, in.		Length of Pipe, Feet											
	10	20	30	40	50	60	70	80	90	100	125	150	
1/2	275	189	152	129	114	103	96	89	83	78	69	63	
3/4	576	393	315	267	237	217	196	185	173	162	146	132	
1	1071	732	590	504	448	409	378	346	322	307	275	252	
1-1/4	2205	1496	1212	1039	913	834	771	724	677	630	567	511	
Example: Input BTU requirement of the water heater 100,000 BTUH. Total pipe length, 80 feet = 3/4" IPS required.													

Additional tables are available in the latest edition of the "National Fuel Gas Code", ANSI Z223.1.

VENT PIPE SYSTEM

WARNING

Carbon Monoxide Warning

Follow all vent system requirements by the local authorities having jurisdiction over your installation.

Failure to do so can result in death, explosion, or carbon monoxide poisoning.

Venting

This water heater has a direct vent system in which all air for combustion is taken from the outside atmosphere and all combustion products are discharged to the outdoors.

This water heater must be properly vented for removal of exhaust gases to the outside atmosphere. Correct installation of the vent pipe system is mandatory for the safe and efficient operation of this water heater and is an important factor in the life of the unit.

Vent pipe installation must be performed in accordance with state and local codes, or in the absence of such, the National Fuel Gas Code, NFPA 54, ANSI Z223.1-latest edition. Canadian installations must be performed in accordance with CAN/CGA-B149.

Important: Check to make sure the vent pipe is not blocked in any way.

NOTE: Do not common vent this water heater with any other appliance. Do not install in the same chase or chimney with a metal or high-temperature plastic from another gas or fuel burning appliance.

Vent Pipe Material

The following plastic materials may be used for both the combustion air inlet and exhaust outlet piping subject to state and local codes:

- 2 or 3 inch Schedule 40 PVC or ABS
- 2 or 3 inch Schedule 40 or 80 CPVC
- DWV Pipe is acceptable

NOTE: Use only solid (not foam core) piping.

Plastic pipe and fittings are available through most plumbing suppliers. Always check the marking on the pipe to make sure you are using the correct material.

Vent Pipe Connection to Blower

A 3x2" reducer is supplied with the water heater to connect either 2" or 3" venting to the blower. **Important:** These connections must be properly sealed to prevent the leakage of the products of combustion into the living area .

Vent Pipe Installation

The following guidelines should be followed when installing the air inlet and exhaust outlet piping:

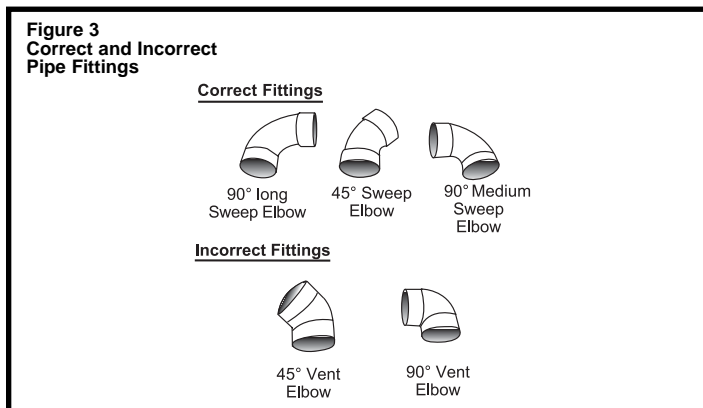
- Venting should be as direct as possible with a minimum number of pipe fittings.
- Vent diameter must not be reduced unless specifically noted in the installation instructions.
- Support all horizontal pipe runs every four feet and all vertical pipe runs every six feet or according to local codes.
- Vents run through unconditioned spaces where below freezing temperatures are expected should be properly insulated to prevent freezing. For horizontal runs, wrap the vent pipe with self-regulating 3 or 5 watt heat tape. The heat tape must be U.L. listed and installed per the manufacturer's instructions.
- Do not connect this venting system with an existing vent or chimney.
- Do not common vent with the vent pipe of any other water heater or appliance.

The combustion air inlet and exhaust outlet piping and termination may be installed in one of the following type terminations:

1. Standard Horizontal (2 Pipe)
2. Vertical (2 Pipe)
3. Concentric Vent - Through the Wall

All pipe, fittings, pipe cement, primers and procedures must conform to American National Standard Institute and American Society for Testing and Materials (ANSI/ASTM) standards in the United States. This water heater has been design certified by CSA International for use with the specified (CSA) listed plastic vent pipe.

Important: Do not use vent elbows in this vent pipe installation (see figure 3 below).



All joints in the inlet and outlet piping must be properly cemented. Size and cut all piping before cementing.

1. Cut the pipe end square and remove all ragged edges and burrs. Make sure the inside of the pipe is clean and free of cuttings and loose dirt. Chamfer the end and apply primer to the fitting and pipe.
2. Using a suitable grade of pipe cement, apply a moderate, even coat inside the fitting. Apply a liberal amount of cement to the outside of the pipe to socket depth.

NOTE: It is important to select the proper pipe cement for the type plastic pipe being used.

3. Assemble the parts quickly while the cement is still wet. Twist the pipe 1/4 turn during insertion and hold for 30 seconds.

Vent Pipe Length

Size the exhaust outlet and combustion air inlet pipes as specified in Table 3 below. This table lists the maximum allowable length in feet of the exhaust outlet and combustion air inlet pipes as related to the number of required elbows and the termination. The specified maximum lengths are for the separate inlet and exhaust pipe systems and not the combined length of both systems. Minimum pipe length is 3 feet with one elbow per side.

1. Determine termination type and pipe size.
2. Determine number of elbows in exhaust pipe (Do not include elbows in the termination.) Corresponding number indicates the maximum length of exhaust pipe.
3. Determine number of elbows in inlet pipe. (Do not include elbows in the termination.) The corresponding number indicates the maximum length of inlet pipe.

Table 3 - Maximum Allowable Length in Feet of Exhaust and Air Inlet Pipe - (42K BTU/Hr models only)								
Pipe Size (in)	Number of 90° Elbows (medium or long sweep only)							Termination Options
	0	1	2	3	4	5	6	
2	25	20	15	10				Std. Horizontal
2	15	10	5	N/A				Vertical
2	20	15	10	5				Concentric
3	65	60	55	50	45	40	35	Std. Horizontal
3	55	50	45	40	35	30	25	Vertical
3	60	55	50	45	40	35	30	Concentric

Notes:

1. N/A - Not Applicable
2. The above maximum lengths are for the separate inlet and outlet pipe systems and not the combined length of both systems.
3. Maximum of 6 elbows may be used per pipe. Use only medium or long sweep elbows. See figure 3 for details.
4. Two 45° elbows are considered equivalent to one 90° elbow.
5. Minimum length is 3 foot per pipe with 1 elbow per side.
6. Use schedule 40 CPVC, ABS, or PVC pipe and fittings.

Table 4 - Maximum Allowable Length in Feet of Exhaust and Air Inlet Pipe - (50K/60K BTU/Hr models)								
Pipe Size (in)	Number of 90° Elbows (medium or long sweep only)							Termination Options
	0	1	2	3	4	5	6	
2	N/A							Std. Horizontal
2	N/A							Vertical
2	N/A							Concentric
3	40	35	30	25	20	15	10	Std. Horizontal
3	30	25	20	15	10	5	N/A	Vertical
3	35	30	25	20	15	10	5	Concentric

Notes:

1. N/A - Not Applicable
2. The above maximum lengths are for the separate inlet and outlet pipe systems and not the combined length of both systems.
3. Maximum of 6 elbows may be used per pipe. Use only medium or long sweep elbows. See figure 3 for details.
4. Two 45° elbows are considered equivalent to one 90° elbow.
5. Minimum length is 3 foot per pipe with 1 elbow per side.
6. Use schedule 40 CPVC, ABS, or PVC pipe and fittings.

Vent Termination Locations

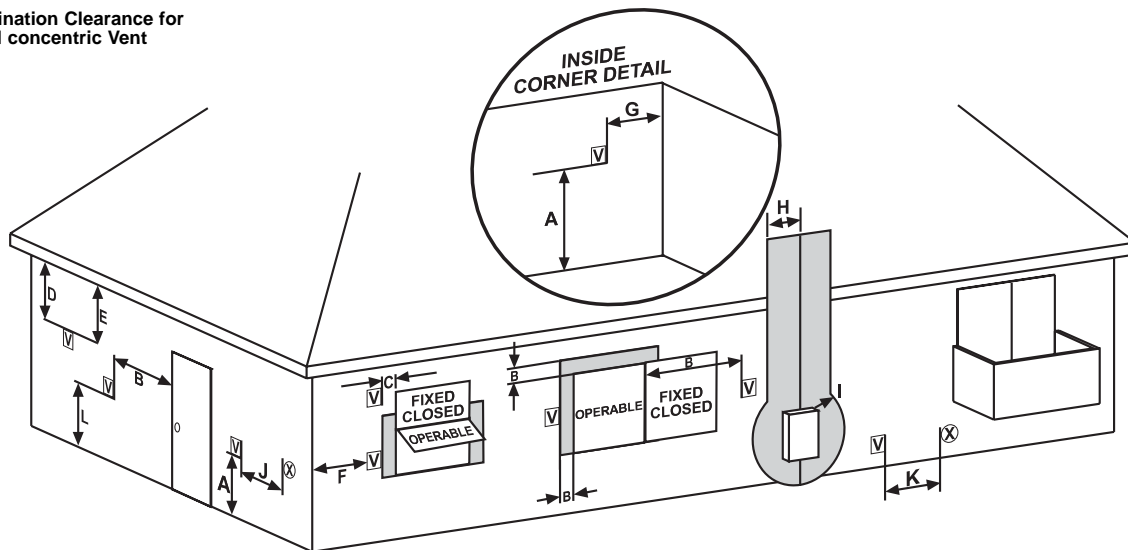
The air inlet and exhaust outlet must be installed with the following minimum clearances (see figure 4):

- Twelve inches above grade or maximum anticipated snow level.
- Twelve inch minimum clearance on top or four foot clearance below or to the side of door or window that may be open.
- Four feet horizontally and vertically from gas or electric meters, gas regulators, dryer vents, vent hoods, bathroom fan exhaust, attic fans and turbines.
- Two feet from an inside corner formed by two exterior walls.
- Two feet from porches, decks, overhangs and other obstructions.

In addition to maintaining the minimum clearances , the vent should terminate according to the following guidelines:

1. Use only a 3" concentric vent on the vent termination. Do not expose any 3" X 2" reducers or bushings to outdoor ambient temperatures.
2. The air inlet and exhaust outlet must not terminate under a patio, deck or any covered area.
3. Do not terminate the vent near walkways or into alleys or other publicly accessible areas.
4. Do not terminate the vent in an area where children or animals could block pipes.
5. Do not locate the vent terminal too close to shrubs or bushes.
6. Caulk all cracks, seams and joints within 6 feet horizontally above and below the vent.

Figure 4
Minimum Termination Clearance for
Inlet/Outlet and concentric Vent



(X) Air Supply Inlet (V) Vent Terminal [Shaded Area] Area Where Terminal Is Not Permitted

US Installations

- A. 12 in (30 cm) min. clearance above grade, veranda, porch, deck, balcony, or maximum anticipated snow level.
- B. 12 in (30 cm) min. clearance on top or 4 ft (122 cm) clearance below or to the side of door or window that may be open.
- C. Clearance to permanently closed window.**
- D. 12 in (30 cm) min vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 ft (61 cm) from the center line of the terminal.
- E. 12 in (30 cm) min. clearance to unventilated soffit.
- F. Clearance to outside corner **
- G. 2 ft (61 cm) clearance to inside corner formed by two exterior walls.
- H. 4 ft (122 cm) clearance to each side of center line extending above meter/regulator assembly.
- I. 4 ft (122 cm) clearance to service regulator vent outlet.
- J. 12 in (30 cm) clearance on top or 4 ft (122 cm) clearance below or to the side of nonmechanical air supply inlet to building or the combustion air inlet to any other appliance.
- K. 3 ft (91 cm) above if within 10 ft (3 m) horizontally of mechanical air supply inlet.

Canadian Installations

- A. 12 in (30 cm) min. clearance above grade, veranda, porch, deck, balcony, or maximum anticipated snow level.
- B. 12 in (30 cm) min. clearance on top and side of window or door that may be opened. Do not install below a window or door that may be opened.
- C. Clearance to permanently closed window.**
- D. 12 in (30 cm) min vertical clearance to ventilated soffit located above the terminal within a horizontal distance of 2 ft (61 cm) from the center line of the terminal.
- E. 12 in (30 cm) min. clearance to unventilated soffit.
- F. Clearance to outside corner **
- G. 2 ft (61 cm) clearance to inside corner formed by two exterior walls.
- H. 3 ft (91 cm) within a height 15 ft (4.57 m) above the meter/regulator assembly.
- I. 4 ft (122 cm) clearance to service regulator vent outlet.
- J. 12 in (30 cm) clearance to nonmechanical air supply inlet to building or the combustion air inlet to any other appliance.
- K. 6 ft (1.83 m) clearance to mechanical air supply inlet.

**Clearance in accordance with local installation codes and the requirements of the gas supplier.

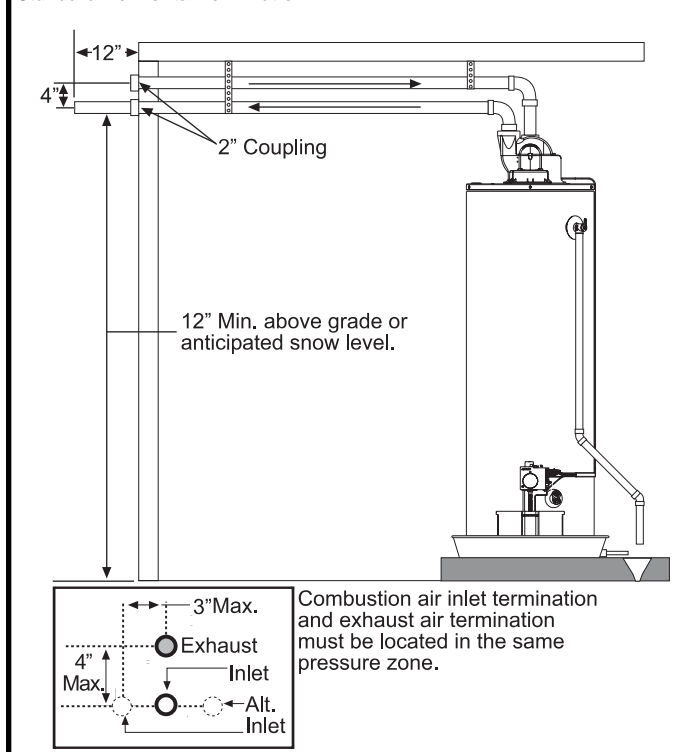
INLET/OUTLET VENT TERMINATIONS

Standard Horizontal Termination

The standard horizontal air inlet termination is a 2 inch or 3 inch pipe which terminates at the exterior wall and utilizes a coupling to prevent the pipe from being pushed back into the structure. The standard horizontal exhaust outlet termination is a 2 inch or 3 inch pipe which terminates 12 inches from the outside wall (see figure 5). The air inlet must be located with respect to the exhaust outlet as shown in figure 5. To prevent potential condensate from collecting in the venting system slope the vent at a downward pitch of 1/8" per 5ft. away from the water heater.

Install the correct size coupling at the outside wall on both the inlet and exhaust to prevent the terminations from being pushed inward.

FIGURE 5
Standard Horizontal Termination

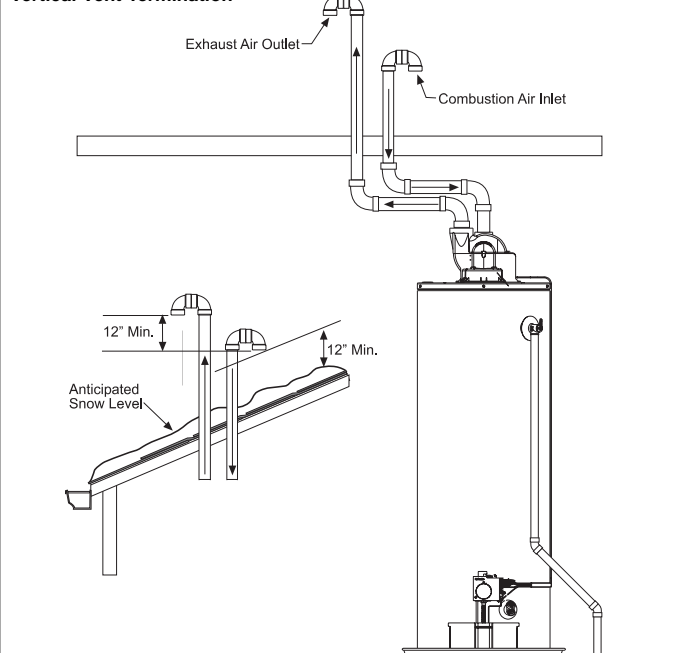


Vertical Termination

The vertical inlet and exhaust outlet require a return bend or two medium or long sweep radius 90° elbows to keep the air inlet and exhaust outlet downward and prevent entry of rain. Do not include these elbows when calculating the maximum allowable vent pipe because they have already been considered in the vent tables. Refer to figure 6 for the proper location of the air inlet with respect to the exhaust outlet termination. The vertical exhaust outlet termination is a 2 inch or 3 inch pipe which terminates at least 12 inches above the inlet air termination.

The air inlet and exhaust outlet terminations must be at least 12 inches above the roof line or anticipated snow levels. See figure 6 below.

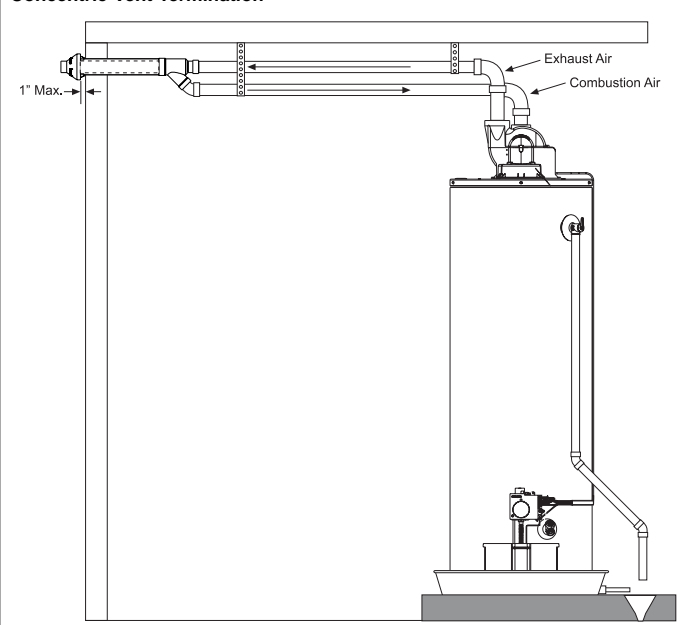
FIGURE 6
Vertical Vent Termination



Concentric Vent Terminations

Install 3" Concentric vent kit model KGAVT0601CVT, part number 6910543. See Manufacturer's instructions for complete installation or call customer service at 1-800-456-9805 for assistance. To prevent potential condensate from collecting in the venting system slope the vent at a downward pitch of 1/8" per 5ft. away from the water heater.

FIGURE 7
Concentric Vent Termination



WATER SYSTEM PIPING

Piping Installation

Piping, fittings, and valves should be installed according to the installation drawing (Figure 8). If the indoor installation area is subject to freezing temperatures, the water piping must be protected by insulation.

Water supply pressure should not exceed 80% of the working pressure of the water heater. The working pressure is stated on the water heater's data plate. If this occurs a pressure limiting valve with a bypass may need to be installed in the cold water inlet line. This should be placed on the supply to the entire house in order to maintain equal hot and cold water pressures.

Important: Heat cannot be applied to the water fittings on the heater as they may contain nonmetallic parts. If solder connections are used, solder the pipe to the adapter before attaching the adapter to the hot and cold water fittings.

Important: Always use a good grade of joint compound and be certain that all fittings are drawn up tight.

1. Install the water piping and fittings as shown in Figure 8. Connect the cold water supply (3/4" NPT) to the fitting marked "C". Connect the hot water supply (3/4" NPT) to the fitting marked "H". Important: Some models may contain energy saving heat traps to prevent the circulation of hot water within the pipes. Do not remove the inserts within the heat traps.
2. The installation of unions in both the hot and cold water supply lines is recommended for ease of removing the water heater for service or replacement.
3. The manufacturer of this water heater recommends installing a tempering valve or an anti-scald device in the domestic hot water line as shown in Figure 9. These valves reduce the point of use temperature of the water by mixing cold and hot water and are readily available for use. Contact a licensed plumber or the local plumbing authority.
4. If installing the water heater in a closed water system, install an expansion tank in the cold water line as specified under "Closed System/Thermal Expansion".
5. Install a shut-off valve in the cold water inlet line. It should be located close to the water heater and be easily accessible. Know the location of this valve and how to shut off the water to the heater.
6. Install a temperature and pressure relief valve in the opening marked "Temperature and Pressure (T & P) Relief Valve" on the water heater. Add a discharge line to the opening of the T & P relief valve. Follow the instructions under Temperature and Pressure Relief Valve".

FIGURE 8
Typical Water Piping Installation

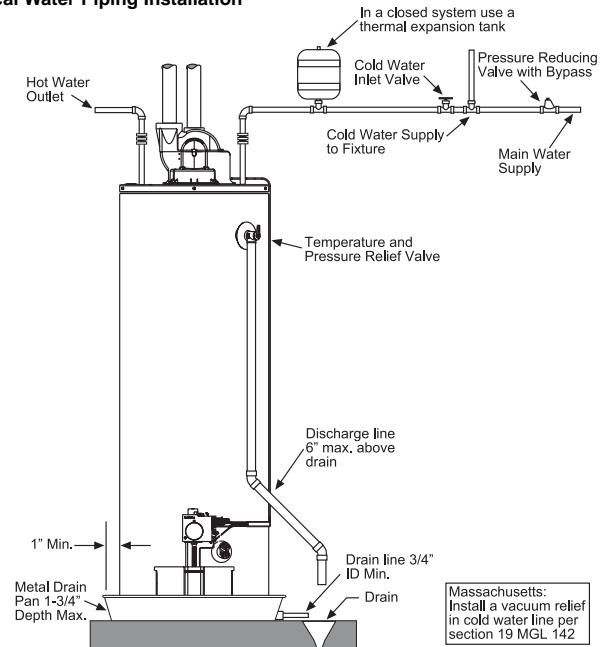
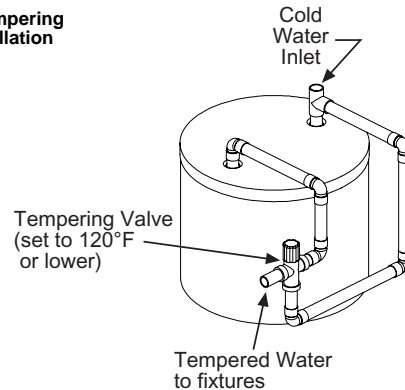


FIGURE 9
Typical Tempering Valve Installation



Please note the following:

DO NOT install this water heater with iron piping. The system should be installed only with piping that is suitable for potable (drinkable) water such as copper, CPVC, or polybutylene. **DO NOT** use PVC water piping.

DO NOT use any pumps, valves, or fittings that are not compatible with potable water.

DO NOT use valves that may cause excessive restriction to water flow. Use full flow ball or gate valves only.

DO NOT use 50/50 tin-lead solder (or any lead based solder) in potable water lines. Use 95/5 tin-antimony or other equivalent material.

DO NOT tamper with the gas valve/thermostat, igniter, thermocouple, or temperature and pressure relief valve. Tampering voids all warranties. Only qualified service technicians should service these components.

DO NOT use with piping that has been treated with chromates, boiler seal, or other chemicals.

DO NOT add any chemicals to the system piping which will contaminate the potable water supply.

Closed System/Thermal Expansion

Periodic discharge of the temperature and pressure relief valve may be due to thermal expansion in a closed water supply system. The water utility supply meter may contain a check valve, backflow preventer or water pressure reducing valve. This will create a closed water system. During the heating cycle of the water heater, the water expands causing pressure inside the water heater to increase. This may cause the temperature and pressure relief valve to discharge small quantities of hot water. To prevent this, it is recommended that a diaphragm-type expansion tank (suitable for potable water) be installed on the cold water supply line. The expansion tank must have a minimum capacity of 1.5 U.S. gallons for every 50 gallons of stored water. Contact the local water supplier or plumbing inspector for information on other methods to control this situation.

Important: Do not plug or remove the temperature and pressure relief valve.

Temperature and Pressure Relief Valve

⚠ WARNING



Explosion Hazard

If the temperature and pressure relief valve is dripping or leaking, have a qualified service technician replace it.

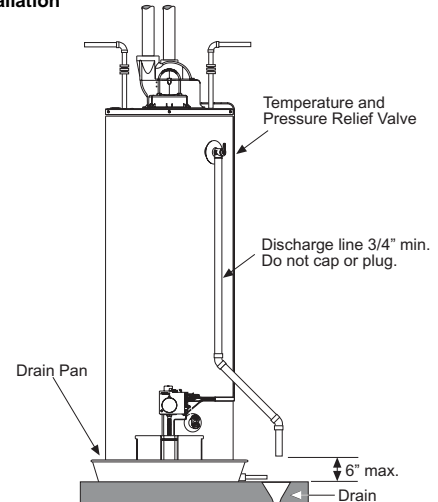
- Do not plug valve.
- Do not remove valve.

Failure to follow these instructions can result in death or explosion.

For protection against excessive pressures and temperatures, a temperature and pressure relief valve must be installed in the opening marked "T & P RELIEF VALVE" (see Figure 10.) This valve must be design certified by a nationally recognized testing laboratory that maintains periodic inspection of the production of listed equipment or materials as meeting the requirements for Relief Valves and Automatic Shut-off Devices for Hot Water Supply Systems, ANSI Z21.22. The function of the temperature and pressure relief valve is to discharge water in large quantities in the event of excessive temperature or pressure developing in the water heater. The valve's relief pressure must not exceed the working pressure of the water heater as stated on the data plate.

Important: Only a new temperature and pressure relief valve should be used with your water heater. Do not use an old or existing valve as it may be damaged or not adequate for the working pressure of the new water heater. Do not place any valve between the relief valve and the tank.

FIGURE 10
Temperature and Pressure
Relief Valve Installation



The Temperature and Pressure Relief Valve:

- Must not be in contact with any electrical part.
- Must be connected to an adequate discharge line.
- Must not be rated higher than the working pressure shown on the data plate of the water heater.

The Discharge Line:

- Must not be smaller than the pipe size of the relief valve or have any reducing coupling installed in the discharge line.
- Must not be capped, blocked, plugged or contain any valve between the relief valve and the end of the discharge line.
- Must terminate a maximum of six inches above a floor drain or external to the building.
- Must be capable of withstanding 250°F (121°C) without distortion.
- Must be installed to allow complete drainage of both the valve and discharge line.


ELECTRICAL CONNECTIONS

Before plugging in the water heater, always make sure:

- The voltage and frequency correspond to that specified on the water heater wiring diagram.
- The electrical outlet has the proper overload fuse or breaker protection. **Important:** Do not use an extension cord to connect the water heater to an electrical outlet.
- The water heater and the outlet are properly grounded.
- Installed in accordance with prevailing provisions of local codes, or in the absence of such, National Fuel Gas Code, NFPA 54, ANSI Z223.1-Latest Edition. Canadian installations must be performed in accordance with CAN/CGA-B149.

Note: Always reference the wiring diagram for the correct electrical connections.

After making all electrical connections, completely fill the tank with water and check all connections for leaks. Open the nearest hot water faucet and let it run for 3 minutes to

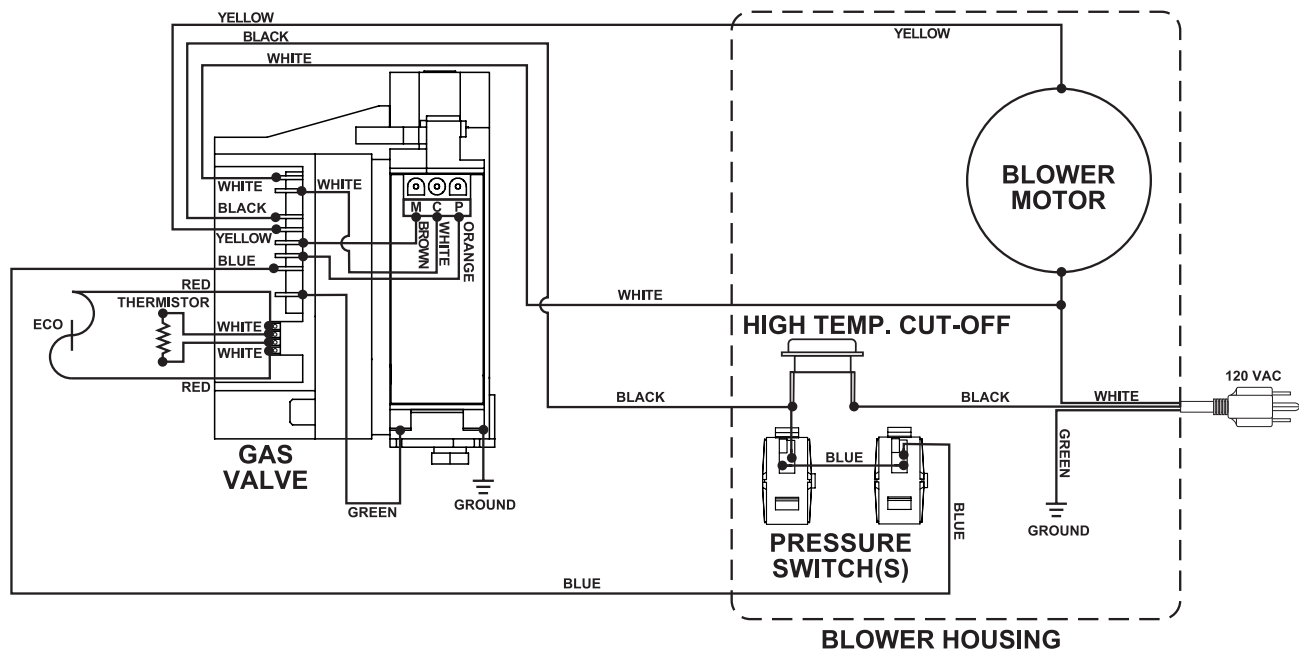


WARNING

Electrical Shock Hazard
Disconnect power before servicing.
Replace all parts and panels before operating.
Failure to do so can result in death or electrical shock.

purge the water lines of air and sediment and to ensure complete filling of the tank. The electrical power may then be turned on. Verify proper operation after servicing.

WIRING DIAGRAM



NOTICE:

IF ANY OF THE ORIGINAL WIRES AS SUPPLIED WITH THE APPLIANCE MUST BE REPLACED, IT MUST BE REPLACED WITH 18 GA. STRANDED COPPER 105° C WIRE OR EQUIVALENT. ELECTRICAL RATING 115 VAC. 60 HZ. LESS THAN 5 AMPS.

CAUTION:

LABEL ALL WIRES PRIOR TO DISCONNECTION WHEN SERVICING CONTROLS. WIRING ERRORS CAN CAUSE IMPROPER AND DANGEROUS OPERATION. VERIFY PROPER OPERATION AFTER SERVICING.

INSTALLATION CHECKLIST

Water Heater Location

- Centrally located with the water piping system. Located as close to the gas piping and vent pipe system as possible.
- Located indoors and in a vertical position. Protected from freezing temperatures.
- Proper clearances from combustible surfaces maintained and not installed directly on a carpeted floor.
- Provisions made to protect the area from water damage. Drain pan installed and piped to an adequate drain.
- Installation area free of corrosive elements and flammable materials.
- Sufficient room to service the water heater.

Gas Supply and Piping

- Gas supply is the same type as listed on the water heater data plate.
- Gas line equipped with shut-off valve, union, and drip leg.
- Approved pipe joint compound used.
- Adequate pipe size and of approved material.
- Chloride-free soap and water solution or other approved means used to check all connections and fittings for possible gas leaks.

Vent Pipe System

- Vent pipe and fittings of approved material.
- Acceptable size, length, and number of elbows on air inlet pipe.
- Acceptable size, length, and number of elbows on exhaust outlet pipe.
- Installed in accordance with prevailing provisions of local codes, or in the absence of such, National Fuel Gas Code, NFPA 54, ANSI Z223.1-Latest Edition. Canadian Installations must be performed in accordance with CAN/CGA-B149.
- Slope 2" & 3" horizontal piping at a downward pitch of 1/8" per 5ft. away from the water heater.
- Not obstructed in any way.

Vent Termination

Concentric

- 12" Min. above grade/snow level.
- Slope exhaust outlet/air inlet piping at a downward pitch of 1/8" per 5ft. away from the water heater.

Horizontal

- Correct relationship - outlet to inlet.
- 12" Min. above grade/snow level.
- Slope 2" & 3" horizontal piping at a downward pitch of 1/8" per 5ft. away from the water heater.
- Away from corners, other vents, windows, etc.

Vertical

- Inlet - 12" Min. above roof/snow level.
- Correct relationship - outlet to inlet.

Water System Piping

- Temperature and pressure relief valve properly installed with a discharge line run to an open drain and protected from freezing.
- All piping properly installed and free of leaks.
- Heater completely filled with water.
- Closed system pressure build-up precautions installed.
- Tempering valve installed per manufacturer's instructions.

Electrical Connections

- Unit connected to a dedicated power supply.
- Unit connected to a 120V electrical supply.
- Proper polarity.
- Water heater properly grounded.
- Installed in accordance with prevailing provisions of local codes, or in the absence of such, the latest edition of the National Electric Code, ANSI/NFPA 70 and/or the CSA C22.1, Electrical Code.

OPERATING YOUR WATER HEATER

Lighting Instructions

Read and understand these directions thoroughly before attempting to operate the water heater. Make sure the tank is completely filled with water before operating the water heater. Check the data plate near the gas control valve/thermostat for the correct gas. Do not use this water heater with any gas other than the one listed on the data plate. If you have any questions or doubts, consult your gas supplier or gas utility company.

L.P.G. (Bottled Propane) Models

Liquefied petroleum gas is over 50% heavier than air and in the occurrence of a leak in the system, the gas will settle at floor level. Basements, crawl spaces, skirted areas under mobile homes (even when ventilated), closets and areas below ground level will serve as pockets for the accumulation of gas. Before lighting an L.P. gas water heater, smell all around the appliance at floor level. If you smell gas, follow the instructions as given in the warning on the front page.

When your L.P. tank runs out of fuel, turn off the gas at all gas appliances including pilot lights. After the tank is refilled, all appliances must be re-lit according to their manufacturer's instructions.

WARNING



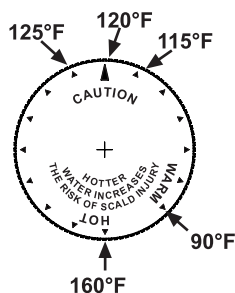
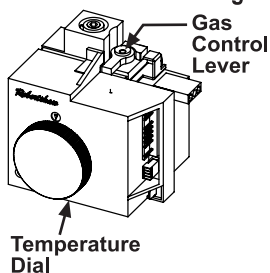
Explosion Hazard

Replace viewport if glass is missing or damaged.
Failure to do so can result in death, explosion or fire.

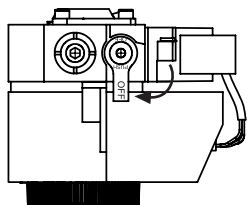
OPERATING INSTRUCTIONS

1. Remove the outer door

2. Turn temperature dial counterclockwise to the lowest setting.



3. Turn off electrical power to the appliance.
4. Depress gas control lever to shut off gas flow.

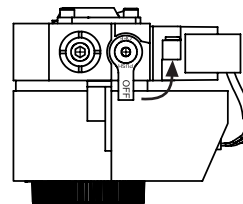


5. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

6. To clear any gas that may have accumulated, wait ten (10) minutes. If you smell gas, STOP! Refer to the safety warning on the front cover of this manual. If you do not smell gas, go to the next step.

7. Turn on the electrical power to the appliance. The indicator light will flash slowly to show the unit is powered.

8. Turn the gas control lever to the on position.



9. Turn the temperature dial clockwise to the desired setting.

10. If the appliance will not operate after three automatic tries, follow these instructions once more. If the appliance still refuses to light, follow the instructions "To Turn Off Gas to Appliance" and call your service technician or gas supplier.

TO TURN OFF GAS TO APPLIANCE

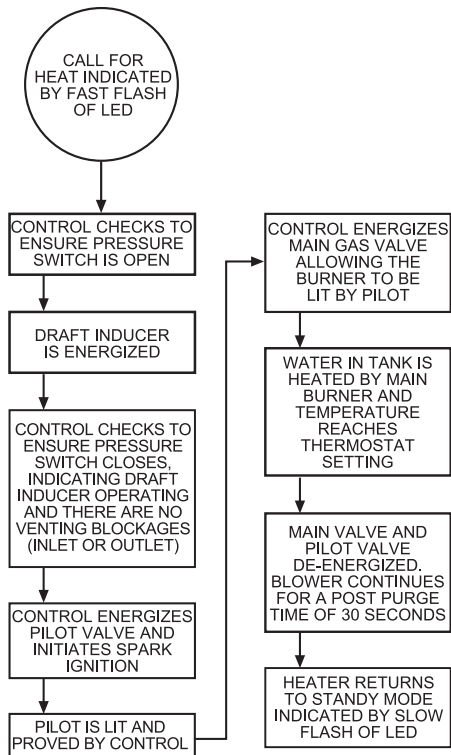
1. Turn the temperature dial counterclockwise to the lowest setting.
2. Turn off electric power to the appliance if service is to be performed.

3. Depress gas control lever to shut off gas flow.
4. Close the manual gas shut-off valve in the gas supply line near the water heater.

Water Heater Operation

Figure 11 below shows the water heater's sequence of operation when a call for heat is initiated. The ignition control module will attempt to light the burner three times. If the ignition control does not detect ignition it will enter lock-out mode, indicated by a three flash error code.

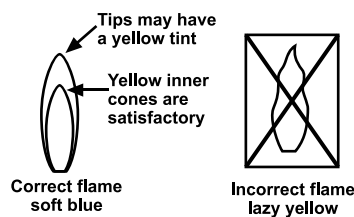
FIGURE 11
Sequence of Operation



Burner Flames

Inspect the burner flames through the viewport and compare them to the drawings in Figure 12. A properly operating burner should produce a soft blue flame. Blue tips with yellow inner cones are satisfactory. The tips of the flame may have a slight yellow tint. The flame should not be all yellow or have a sharp blue-orange color. Contaminated air may cause an orange colored flame. Contact a qualified service technician if the flame is not satisfactory.

FIGURE 12
Flame Characteristics



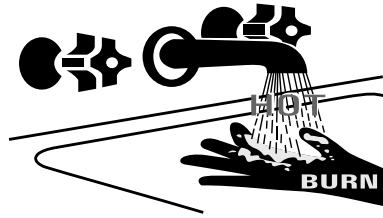
Stacking

Stacking occurs when a series of short draws of hot water (3 gallons or less) are taken from the water heater tank. This causes increased cycling of the burner and can result in increased water temperatures at the hot water outlet. An anti-scald device is recommended in the hot water supply line to reduce the risk of scald injury.

Emergency Shut Down

Important: Should overheating occur or the gas supply fails to shut off, turn off the water heater's manual gas control valve and call a qualified service technician.

⚠ WARNING



Water temperature over 125°F (52°C) can cause severe burns instantly or death from scalds.

Children, disabled and elderly are at highest risk of being scalded.

Feel water before bathing or showering.

Tempering valves are recommended.

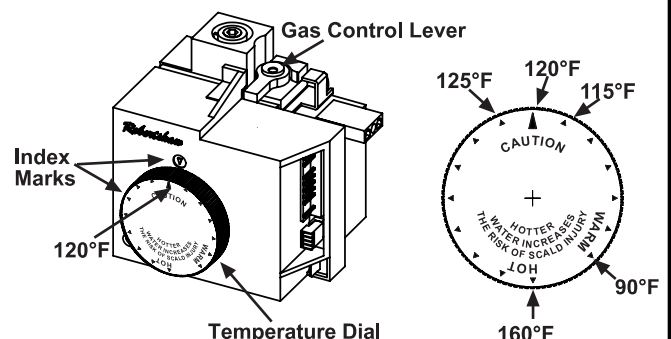
The thermostat is adjusted to its lowest temperature when it is shipped from the factory. Water temperature can be regulated by moving the temperature dial to the preferred setting. The preferred starting point is 120°F (49°C). Align the index bar on the thermostat with the desired water temperature as shown in Figure 13. There is a hot water scald potential if the thermostat is set too high.

Important: Adjusting the thermostat past the 120°F (49°C) bar on the temperature dial will increase the risk of scald injury. Hot water can produce first degree burns within:

- 120°F (49°C) more than 5 minutes
- 130°F (54°C) at 20 seconds
- 140°F (60°C) at 3 seconds
- 150°F (66°C) at 1-1/2 seconds
- 160°F (71°C) at less than 1 second

Note: During low demand periods when hot water is not being used, a lower thermostat setting will reduce energy losses and may satisfy your normal hot water needs. If hot water use is expected to be more than normal, a higher thermostat setting may be required to meet the increased demand. When leaving your home for extended periods (vacations, etc.) turn the temperature dial to its lowest setting. This will maintain the water at low temperatures with minimum energy losses and prevent the tank from freezing during cold weather.

Figure 13
Robertshaw Gas Valve/Thermostat Settings



Operational Conditions

Condensation

Moisture from the products of combustion condenses on the tank surface and the outside jacket of the water heater and forms drops of water which may fall onto the burner or other hot surfaces. This will produce a “sizzling” or “frying” noise. This condensation is normal and should not be confused with a leaking tank. Condensation may increase or decrease at different times of the year.

High efficient energy saver water heaters will produce larger amounts of condensation on initial start-up or when a large amount of hot water is being used. Do not confuse this with a “tank leak”. Once the water reaches a temperature of 120°F (49°C) and the tank warms up (usually 1-2 hours), the condensation will stop.

Important: It is always recommended that a suitable drain pan be installed under the water heater to protect the area from water damage resulting from normal condensation production, a leaking tank or piping connections. Refer to “Location Requirements” on page 4. Under no circumstances is the manufacturer to be held responsible for any water damage in connection with this water heater.

Water Heater Sounds

During the normal operation of the water heater, sounds or noises may be heard. These noises are common and may result from the following:

1. Normal expansion and contraction of metal parts during periods of heat-up and cool-down.
2. Condensation causes sizzling and popping within the burner area and should be considered normal.
3. Sediment buildup in the tank bottom will create varying amounts of noise and may cause premature tank failure. Drain and flush the tank as directed under “Draining and Flushing”.

Smoke/Odor

The water heater may give off a small amount of smoke and odor during the initial start-up of the unit. This is due to the burning off of oil from metal parts of a new unit and will disappear after a few minutes of operation.

Safety Shut-off

This water heater is designed to automatically shut-off in the event of the following:

1. The water temperature exceeds 180°F (83°C.)
2. A blockage occurs in the combustion chamber air inlet, the flue gas exhaust outlet, or both the inlet and outlet.
3. The blower fails to operate or operates improperly.

A high temperature limit switch or ECO (Energy Cut Off) in the tank is used to shut off the unit if the water temperature exceeds 180°F (83°C.) The ECO is a single use switch and requires complete replacement of the entire thermostat. If the ECO should function, the water heater cannot be used until the thermostat is replaced by a qualified service technician. Contact your local dealer for service information.

Anode Rod/Water Odor

Each water heater contains at least one anode rod, which will slowly deplete while protecting the glass-lined tank from corrosion and prolonging the life of the water heater. Certain water conditions will cause a reaction between this rod and the water. Once the anode is depleted, the tank will start to corrode, eventually developing a leak. The most common complaint associated with the anode rod is a “rotten egg smell” produced from the presence of hydrogen sulfide gas dissolved in the water. **Do not remove this rod permanently as it will void any warranties, stated or implied.** A special anode can be ordered if water odor or discoloration occurs. **This rod may reduce but not eliminate water odor problems.** The water supply system may require special filtration equipment from a water conditioning company to successfully eliminate all water odor problems.

Artificially softened water is exceedingly corrosive because the process substitutes sodium ions for magnesium and calcium ions. The use of a water softener may decrease the life of the water heater tank.

The anode rod should be removed from the water heater tank every 3 years for inspection. If the rod is more than 50% depleted, the anode rod should be replaced.

In replacing the anode:

1. Turn off gas supply to the water heater.
2. Shut off the water supply and open a nearby hot water faucet to depressurize the water tank.
3. Drain approximately 5 gallons of water from tank (Refer to “Draining and Flushing” for proper procedures.) Close drain valve.
4. Remove old anode rod.
5. Use Teflon® tape or approved pipe sealant on threads and install new anode rod.
6. Turn on water supply and open nearby hot water faucet to purge air from water system.
7. Restart the water heater as directed under “Operating Your Water Heater.” See the “Repair Parts Illustration” for anode rod location on page 22.

MAINTENANCE OF YOUR WATER HEATER

Draining and Flushing

It is recommended that the tank be drained and flushed every 6 months to remove sediment which may build up during operation. The water heater should be drained if being shut down during freezing temperatures. To drain the tank, perform the following steps:

1. Turn off the gas to the water heater at the manual gas shut-off valve.
2. Turn off the electrical supply to the water heater.
3. Close the cold water inlet valve.
4. Open a nearby hot water faucet.
5. Connect a hose to the drain valve and terminate it to an adequate drain.

Note: The drain hose should be rated for at least 200°F (93°C). If the drain hose does not have this rating, open the cold water inlet valve and a nearby hot faucet until the water is no longer hot.

6. Open the water heater drain valve and allow all the water to drain from the tank. Flush the tank with water as needed to remove sediment.
7. Close the drain valve, refill the tank, and restart the heater as directed under "Operating Your Water Heater".

If the water heater is going to be shut down for an extended period, the drain valve should be left open.

Important: Condensation may occur when refilling the tank and should not be confused with a tank leak.

Routine Preventative Maintenance

At least annually, a visual inspection should be made of the venting and air supply system, piping systems, main burner, and pilot burner. Check the water heater for the following:

- Obstructions, damage, or deterioration in the venting system. Make sure the ventilation and combustion air supplies are not obstructed.
- Build up of soot and carbon on the main burner and pilot burner. Check for a soft blue flame.
- Leaking or damaged water and gas piping.
- Presence of flammable or corrosive materials in the installation area.
- Presence of combustible materials near the water heater.
- Verify proper operation after servicing this water heater.

Important: If you lack the necessary skills required to properly perform this visual inspection, you should not proceed, but get help from a qualified service technician.

Temperature and Pressure Relief Valve

⚠ WARNING



Explosion Hazard

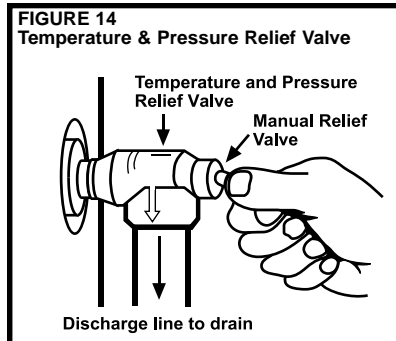
If the temperature and pressure relief valve is dripping or leaking, have a qualified service technician replace it.

- Do not plug valve.
- Do not remove valve.

Failure to follow these instructions can result in death or explosion.

Manually operate the temperature and pressure relief valve at least once a year to make sure it is working properly (see Figure 14.) To prevent

water damage, the valve must be properly connected to a discharge line which terminates at an adequate drain. Standing clear of the outlet (discharged water may be hot), slowly lift and release the lever handle on the temperature and pressure relief valve to allow the valve to operate freely and return to its closed position. If the valve fails to completely reset and continues to release water, immediately shut off the manual gas valve and the cold water inlet valve and call a qualified service technician.



Replacement Parts

Replacement parts may be ordered through your plumber or the local distributor. Parts will be shipped at prevailing prices and billed accordingly. When ordering replacement parts, always have the following information ready:

1. model, serial, and product number
2. type of gas
3. item number
4. parts description

See pages 22 & 23 for a list of available repair parts.

Removing the Burner/Manifold Assembly

1. Turn off the gas to the water heater at the manual shut-off valve (See figure 2), and disconnect power to the water heater.
2. Depress the gas control lever to turn it to the "OFF" position (Figure 13.)
3. Remove the outer doors.
4. Remove the 2 screws securing the manifold door assembly to the skirt.
5. Disconnect the pilot tube, the igniter wire and manifold tube at the thermostat. (Figure 15) Note: L.P. gas systems use reverse (left-hand) threads on the manifold tube.
6. Grasp the manifold tube and push down slightly to free the manifold, and pilot tube.
7. Carefully remove the manifold assembly from the burner compartment. Be sure not to damage internal parts.
8. Check the burner to see if it is dirty or clogged. The burner may be cleaned with soap and hot water.

FIGURE 15
Gas Valve/Manifold Assembly

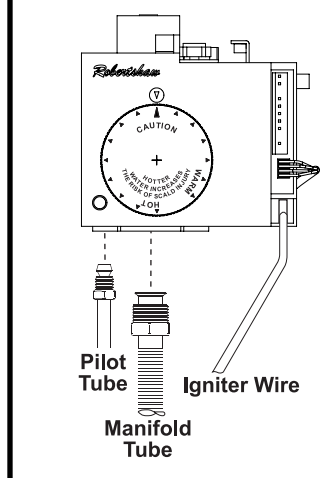


FIGURE 16A
Natural Gas Burner Assembly

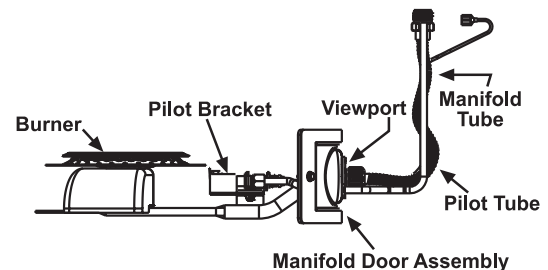
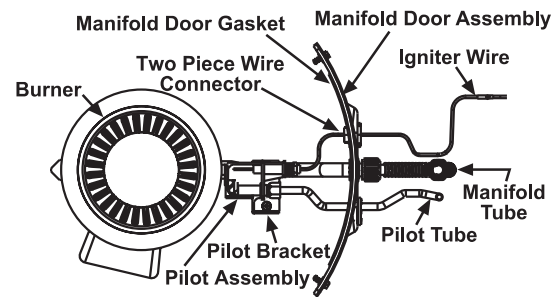
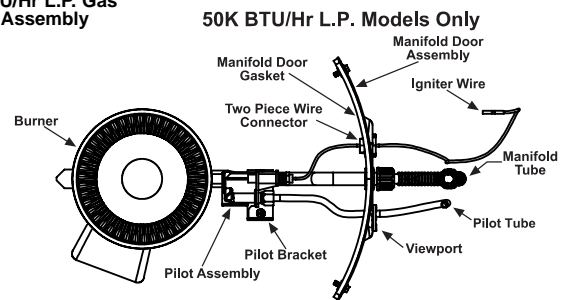


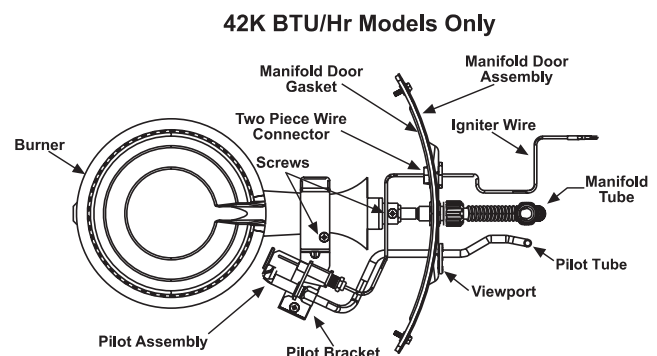
FIGURE 16B
50K BTU/Hr L.P. Gas Burner Assembly



L.P. Gas Burner - 42K BTU Models

1. Separate the pilot bracket from the L.P. burner by removing screw.
2. Loosen set screw located on top of the L.P. burner near the manifold door. Carefully, pull the burner away from the manifold door assembly.
3. Check the burner to see if it is dirty or clogged. The burner may be cleaned with soap and hot water (Figure 17).

FIGURE 17
L.P. Burner Assembly



Removing the Burner from the Manifold Assembly

Natural Gas Burner & 50K BTU/Hr L.P. Models

1. Take off the burner by removing the two (2) screws located underneath the burner.
2. Check the burner to see if it is dirty or clogged. The burner may be cleaned with soap and hot water (See Figure 16A-Natural Gas, See Figure 16B-L.P. Gas).

⚠️ WARNING



Explosion Hazard

Tighten both manifold door screws securely.

Remove any fiberglass between gasket and combustion chamber.

Replace viewport if glass is missing or damaged.

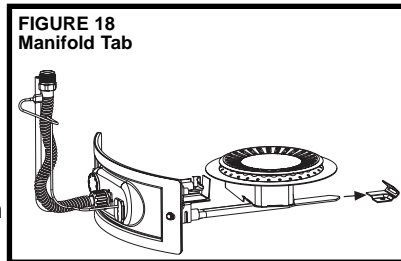
Replace two piece wire connector if missing or removed.

Replace door gasket if damaged.

Failure to do so can result in death, explosion, or fire.

Replacing the Manifold Assembly

1. Check the door gasket for damage or imbedded debris prior to installation.
2. Inspect the viewport for damage and replace as required.
3. Insert the manifold assembly into the burner compartment making sure that the tab of the manifold tube engages in the slot of the bracket inside the combustion chamber (Figure 18). The tab is located at the bottom of the burner for L.P. Models.



4. Inspect the door gasket and make sure there is no fiberglass insulation between the gasket and the combustion chamber.
5. Replace the two screws which secure the manifold assembly door to the combustion chamber. Tighten securely. There should be no space between the gasket part of the manifold door and combustion chamber. **Do not operate the water heater if the door gasket is not sealed**
6. Reconnect the manifold tubing and pilot tubing to the thermostat. Do not cross-thread or apply any thread sealant to these fittings.

Note: L.P. gas systems use reverse (left-hand) threads on the manifold tube.

7. Reconnect the igniter wire.
8. Turn gas supply on and refer to the "Lighting Instructions" on page 15.
9. Check for leaks. Use a chloride-free soap and water solution (bubbles forming indicate a leak) or other approved method. **All leaks must be fixed immediately.**
10. Replace the outer door.

Removing and Replacing the Gas Control Valve/Thermostat

Important: Use only factory authorized replacement parts.

1. On the gas control valve/thermostat turn the temperature dial counterclockwise to its lowest setting. Depress the gas control lever to turn it to the "OFF" position (Figure 13).
2. Turn off the gas at the manual shut-off valve on the gas supply pipe (Figure 2).
3. Drain the water heater. Refer to the section of "Draining and Flushing" on page 18 and follow the procedure.
4. Disconnect the igniter wire from the thermostat. Disconnect the manifold and pilot tube at the thermostat (Figure 15). Note: L.P. gas systems use reverse (left-hand) threads on the manifold tube.
5. Refer to "Gas Piping" (Figure 2) and disconnect the ground joint union in the gas piping. Disconnect the remaining pipe from the gas valve/thermostat.

Important: When removing the gas control valve/thermostat do not use pipe wrench or vise to grip body. Do not insert any type of blunt instrument into the inlet or outlet connections. Using these type tools may result in damage to the gas control valve/thermostat.

6. Turn the gas control valve/thermostat counter-clockwise. Remove the gas control valve/thermostat.

To replace the gas control valve/thermostat, reassemble in reverse order. Use only factory authorized replacement parts.

Be sure to use approved Teflon tape or pipe joint compound on the gas piping connections and fitting on the back of the gas valve that screws into tank.

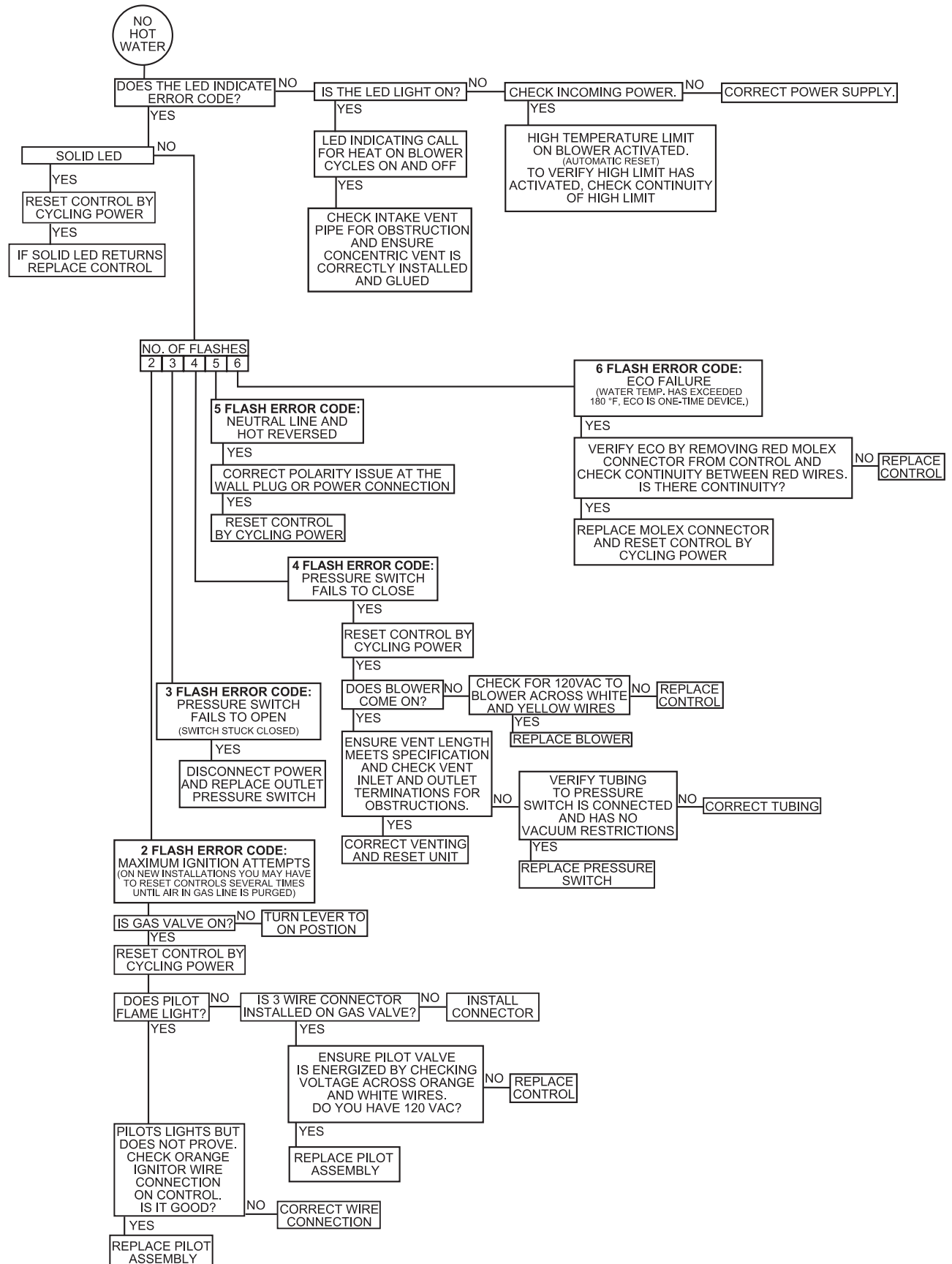
Be sure to remove the pilot ferrule nut from the new gas control valve/thermostat.

Turn gas supply on and check for leaks. Use a chloride-free soap and water solution (bubbles forming indicate a leak) or other approved method.

Be sure tank is completely filled with water before lighting and activating the water heater. Follow the "Lighting Instructions" on page 15.

If additional information is required, contact the Service Department at: 1-800-456-9805.

TROUBLESHOOTING FLOWCHART



REPAIR PARTS ILLUSTRATION

When ordering repair parts always give the following information:

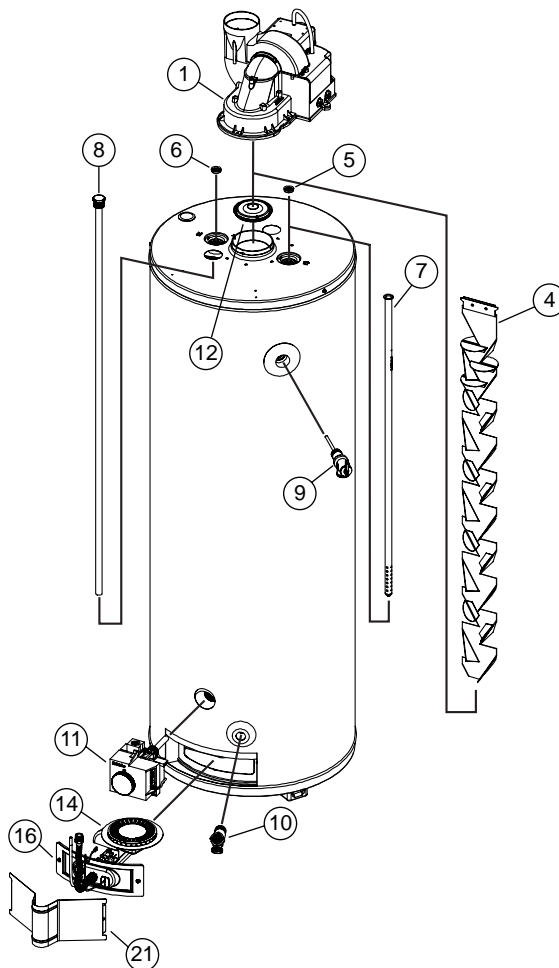
1. Model, serial and product number
2. Type of gas
3. Item number
4. Parts description

Repair Parts List

Item No.	Parts Description
1	Blower
2	Inlet Pressure Switch (Not Pictured)
3	Outlet Pressure Switch (Not Pictured)
4	Flue Baffle
5	Heat Trap (Cold)
6	Heat Trap (Hot)
7	Cold Water Dip Tube
8	Anode Rod*
9	Temperature and Pressure Valve
10	Drain Valve
11	Gas Valve/Thermostat
12	Restrictor Plate
13	Pilot Assembly - Natural Gas/L.P. Gas**
14	Natural Gas Burner
15	L.P. Gas Burner**
16	Manifold Door Assembly - Natural Gas
17	Manifold Door Assembly - L.P. Gas**
18	Two Piece Wire Connector w/Retainer Clip**
19	Manifold Door Gasket**
20	Viewport Assembly**
21	Outer Door

* Special anode rod available, see page 17.

** Pictured on next page.



Listed Parts Kits and Illustrations

- Item 13: Pilot Assembly. (Note: Pilot Assembly is specific to type of gas, please specify model for correct assembly.)
- Item 14: Burner (Natural Gas)
- Item 15: Burner (L.P. Gas) 42K BTU/Hr & 50T60 Models
- Item 16: Manifold door assembly which contains the manifold tube, gasket, door, pilot tube, two piece wire connector with retainer clip, and pilot assembly. (Natural Gas)
- Item 17: Manifold door assembly which contains the manifold tube, gasket, door, pilot tube, two piece wire connector with retainer clip, and pilot assembly. (L.P. Gas)
- Item 18: Contains two piece wire connector with retainer clip.
- Item 19: Contains manifold door gasket.
- Item 20: Contains viewport.

